

REMARKS

Claims 1-16 are pending. Claims 17-20 have been canceled. Claims 1, 2, 7 and 11 have been amended. No new matter is presented.

Claim 20 is rejected under 35 USC 102(e) as being anticipated by Kobayashi, U.S. Patent No. 6,750,911. This rejection is moot in view of the foregoing claim amendments.

Claims 1-4 and 7 are rejected under 35 USC 103(a) as being unpatentable over Udagawa, U.S. Patent No. 5,880,781 in view of Kobayashi. This rejection is respectfully traversed.

Claim 1 has been amended to clarify the claimed invention. Specifically, it is evident from claim 1 that the read-out state refers to the “previous step mentioned above,” and that the “previous step” means “reading out to the aforementioned first transfer paths a plurality of pixels” As first transfer paths refer to vertical transfer paths, “reading out to the aforementioned first transfer paths” means reading out signal charges from photosensitive pixel parts to vertical transfer paths. Therefore, the “read-out state” refers to the state where signal charges are being read from photosensitive pixel parts to vertical transfer paths.

Applicant submits that the foregoing claim amendments and corresponding explanation clarify to the Examiner that the claim recitation “read-out state” of claim 1 should not be interpreted as “a series of processes to transfer from photosensitive pixel parts to vertical transfer paths, subsequently to horizontal transfer paths through vertical transfer, and then output to the outside of the CCD through horizontal transfer.”

In order to again clarify the differences between the claimed device and the device disclosed in Udagawa, Applicant offers the attached drawing (FIG. 3) for illustrative purposes only.

FIG. 3 is a potential diagram of FIG. 2A, FIG. 2B, FIG. 2C, and FIG. 2D of Udagawa, with the cross sections 1, 2, 3, 4 at the point of the broken lines viewed from the directions represented by the respective arrows. Referring to FIG. 3, “sub” represents a substrate. Elements V1, V2, V3, V4, V5, V6, V7, and (V8) represent vertical transfer path gates. Element 3a represents

a photosensitive pixel part, i.e. a photo diode. Element 3b represents a read out gate part (a read out gate or a sensor gate), and element 3c represents a vertical transfer path. Normally a substrate (sub) is provided under photosensitive pixel parts. In this potential diagram, however, the substrate is shown above the photosensitive pixels to aid in understanding.

The state referred to as the “read-out state” corresponds to the part enclosed with broken lines 3d in FIG. 3. As shown in the part enclosed with broken lines 3f in FIG. 3, in the process of Udagawa, signal charges of other pixels that have been read out from photosensitive pixel parts to vertical transfer paths are not transferred (in other words, not added) on the vertical transfer paths in the “read-out state,” i.e. in the state where VH is being applied to VI or V3. The state represented by element 3d, in other words, the “read-out state” referred to in claimed invention means the state where each readout gate 3b between a photosensitive pixel part and a vertical transfer path remains open. According to the claimed invention, vertical transfer of specific pixels (in other words, specific vertical transfer path gates) is performed while maintaining the state described above, so that a plurality of pixel charges are gathered to and summed up in a specific pixel part (in other words, under a specific vertical transfer path gate). This operation is clearly different from the operation disclosed in Udagawa.

Applicant also refers the Examiner to FIG. 2C of Udagawa, where Udagawa provides that discharge of unread charges (Y2, G2, etc.) is performed by applying high voltage VHH to a substrate (sub). Should this discharge be performed while maintaining the state represented by 3d, the potential of the substrate is lowered while the readout gates 3b are open, and, therefore, the signal charges of C1 and M1 at 3e are discharged to the substrate. As a result, the device will be ineffective as an image sensor. This also distinguishes the claimed invention from that which is taught by Udagawa. Thus, in light of the foregoing, Applicant submits that the features of claim 1 are not taught or suggested by the cited art, either alone or in combination.

Claim 7 recites substantially the same features as claim 1 and is therefore allowable for the reasons set forth above.

Claim 2 has been amended to clarify that transfer of the charges that have been read out to the first transfer paths is performed on the first transfer paths in the forward *and* reverse direction. This is clearly not taught or suggested by the cited art.

Claims 3 and 4 are allowable at least due to their respective dependencies. Applicant requests that this rejection be withdrawn.

Claims 5 and 6 were rejected under 35 USC 103(a) as being unpatentable over Udagawa, in view of Kobayashi and further in view of Hattori, U.S. Patent Application #20050012826. This rejection is respectfully traversed.

Claims 5 and 6 are allowable at least due to their respective dependencies and the fact that Hattori fails to overcome the deficiencies of Udagawa and Kobayashi. Applicant requests that this rejection be withdrawn.

Claim 8 was rejected under 35 USC 103(a) as being unpatentable over Udagawa, in view of Kobayashi and further in view of Yu, U.S. Patent 6,034,366. This rejection is respectfully traversed.

Claim 8 is allowable at least due to their respective dependencies and the fact that Yu fails to overcome the deficiencies of Udagawa and Kobayashi. Applicant requests that this rejection be withdrawn.

Claims 9-12 and 16 were rejected under 35 USC 103(a) as being unpatentable over Kobayashi in view of Udagawa. This rejection is respectfully traversed.

Claim 11 has been amended to clarify that during preliminary measurements, modes are switched based on the results of preliminary measurement so that further preliminary measurement is performed in the mode to which the read-out mode has been switched. Udagawa calls for switching main shooting modes based on the result of preliminary measurements. Thus, the

features of claim 11 are not taught or suggested by the cited references, either alone or in combination.

Claim 13 is rejected under 35 USC 103(a) as being unpatentable over Kobayashi in view of Udagawa in view of Yamada, U.S. Patent No. 5,995,137, and further in view of Misawa, U.S. Patent Application #20010048477. This rejection is respectfully traversed.

Claim 13 is allowable at least due to its dependency and the fact that Yamada and Misawa fail to overcome the deficiencies of Udagawa and Kobayashi. Applicant requests that this rejection be withdrawn.

Claim 14 is rejected under 35 USC 103(a) as being unpatentable over Kobayashi in view of Udagawa in view of Yoshida and Watanabe, U.S. Patent No. 5,420,629. This rejection is respectfully traversed.

Claim 14 is allowable at least due to its dependency and the fact that Yoshida and Watanabe fail to overcome the deficiencies of Udagawa and Kobayashi. Applicant requests that this rejection be withdrawn.

Claim 15 is rejected under 35 USC 103(a) as being unpatentable over Kobayashi in view of Udagawa in view of Tanaka, U.S. Patent No. 6,559,889. This rejection is respectfully traversed.

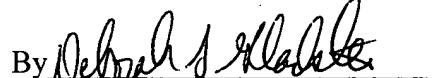
Claim 15 is allowable at least due to its dependency and the fact that Tanak fails to overcome the deficiencies of Udagawa and Kobayashi. Applicant requests that this rejection be withdrawn.

Claim 17 is rejected under 35 USC 103(a) as being unpatentable over Kobayashi in view of Yamada and further in view of Misawa. In view of the foregoing amendments, this rejection is moot.

In the event the U.S. Patent and Trademark Office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 524264-2000500.

Dated: December 7, 2005

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Attachment - Fig. 3